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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|-------------------------|---------------------|------------------|
| 10/015,994 | 11/01/2001 | William John Goetzinger | ROC920010200US1 | 3592 |

31647 7590 01/04/2007
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| EXAMINER |
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HAMANN, JORDAN J

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| ART UNIT | PAPER NUMBER |
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2616

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 01/04/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/015,994 | GOETZINGER ET AL. | |
| | Examiner | Art Unit | |
| | Jordan Hamann | 2616 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-9,11-14 and 16-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-9,11-14 and 16-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/12/06.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:
 - a. the page and line numbers of the amendments to the specification filed 10/12/06 do not correspond with the page and line numbers of the specification filed 11/1/01.
 - b. the amendments to related applications listed 4th-7th lack a serial number after "U.S. Patent Application Serial No." and a filing date after "filed" on the first line of each paragraph.

Appropriate correction is required.

Claim Objections

2. Claims 1 and 19-23 are objected to because of the following informalities:
According to MPRP 2111.04 and 2106C, "adapted to" makes the claim limitation following the term optional and does not require the steps to be performed..

Appropriate correction is required.

3. Claim 11 objected to because of the following informalities: It is dependent on cancelled claim 10. Appropriate correction is required.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

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Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 21-23 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 21-23 are directed to descriptive material per se because it is not capable of causing functional change in a computer. The computer program is not executed by a computer to permit the function of the descriptive material to be realized.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3, 5-9, 13, 14 & 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Usukura (US 2001/0004363 A1) in view of Chen et al (US 6,975,638 B1).

With respect to claims 16 & 23, Usukura discloses on page 1 paragraph 9, a method of operating a data communication apparatus, comprising:

providing a scheduling queue in a scheduler for a network processor (Figure 1 Element 2); and

assigning at least two output ports to the scheduling queue (Figure 1 Elements 12 & 13, each output path having a respective output port on the First Packet Exchange Unit).

Usukura does not disclose using weighted fair queuing (WFQ).

Chen discloses a scheduling queue in a scheduler connected to more than one port and using WFQ (Figure 9 Elements 162 & 134 and column 9 lines 25-65) and that WFQ is a well-known technique for scheduling data flows and packets (column 2 lines 3-14).

Usukura and Chen are analogous art because they are from the same field of endeavor of scheduling data packets.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use WFQ in the scheduling queue of Usukura.

The motivation for doing so would have been to weight each flow according to quality of service for packets from low-volume streams to propagate quickest through WFQ scheduling, and high-volume streams to share the remaining bandwidth fairly (Chen column 2 lines 3-14).

With respect to claim 17, Chen discloses a plurality of queues connected to a plurality of ports through port FIFO (column 9 lines 25-65).

With respect to claim 18, Usukura discloses the method of claim 16, wherein two additional output ports are assigned to the scheduling queue (page 2 paragraph 30).

With respect to claims 8 & 21, Usukura discloses on page 2 paragraphs 20 & 21, a method of enqueueing flows in a scheduler for a network processor, comprising:

receiving data frames for transmission from a first or second output port (Figure 1 Elements 12 & 13, each output path having a respective output port on the First Packet Exchange Unit); and

enqueueing the frames to a first scheduling queue associated with the first output port and second output port.

Usukura does not disclose using weighted fair queuing (WFQ).

Chen discloses a scheduling queue in a scheduler connected to more than one port and using WFQ (Figure 9 Elements 162 & 134 and column 9 lines 25-65) and that WFQ is a well-known technique for scheduling data flows and packets (column 2 lines 3-14).

Usukura and Chen are analogous art because they are from the same field of endeavor of scheduling data packets.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use WFQ in the scheduling queue of Usukura.

The motivation for doing so would have been to weight each flow according to quality of service for packets from low-volume streams to propagate quickest through WFQ scheduling, and high-volume streams to share the remaining bandwidth fairly (Chen column 2 lines 3-14).

With respect to claim 9, Usukura discloses having more than two output paths (page 2 paragraph 30).

With respect to claims 13 & 22, Usukura discloses on page 2 paragraphs 20 & 21 a method of transmitting data frames from a network processor, comprising:

dequeuing data frames from a first queue; and
transmitting from a first output port a data frame associated with the dequeued first flow; and

transmitting from a second output port a data frame associated with the dequeued second flow, the second output port being different from the first output port (Figure 1 Elements 12 & 13, each output path having a respective output port on the First Packet Exchange Unit).

Usukura does not disclose using weighted fair queuing (WFQ).

Chen discloses a scheduling queue in a scheduler connected to more than one port and using WFQ (Figure 9 Elements 162 & 134 and column 9 lines 25-65) and that WFQ is a well-known technique for scheduling data flows and packets (column 2 lines 3-14).

Usukura and Chen are analogous art because they are from the same field of endeavor of scheduling data packets.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use WFQ in the scheduling queue of Usukura.

The motivation for doing so would have been to weight each flow according to quality of service for packets from low-volume streams to propagate quickest through WFQ scheduling, and high-volume streams to share the remaining bandwidth fairly (Chen column 2 lines 3-14).

With respect to claim 14, Usukura discloses having more than two output paths (page 2 paragraph 30).

With respect to claims 19 & 20, the apparatus claims are interpreted and rejected for the same reason as set forth in the method claims 8 & 13, respectively.

With respect to claims 1 & 2, Usukura discloses a data communication apparatus, comprising:

a plurality of output ports (Figure 1 Elements 12 & 13, each output path having a respective output port on the First Packet Exchange Unit); and

a scheduler including one or more scheduling queues (Figure 1 Element 2), each scheduling queue adapted to indicate an order in which data flows are to be serviced (the order in the queue and convergence notice signals, page 1 paragraph 9), at least one scheduling queue having at least two of the output ports assigned to the scheduling queue (Figure 1 Elements 12 & 13, each output path having a respective output port on the First Packet Exchange Unit).

Usukura discloses priority control, but not assigning priorities to data packets associated with data flows.

Chen discloses a scheduling queue in a scheduler connected to more than one port and using WFQ (Figure 9 Elements 162 & 134 and column 9 lines 25-65) and that WFQ is a well-known technique for scheduling data flows and packets (column 2 lines 3-14), which includes classifying packets (column 2 lines 3-14 and column 7 lines 29-37).

Usukura and Chen are analogous art because they are from the same field of endeavor of scheduling data packets.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use WFQ in the scheduling queue of Usukura and to use the priority alone or in conjunction with the convergence signals to indicate an order in which data flows are to be serviced.

The motivation for doing so would have been to weight each flow according to quality of service for packets from low-volume streams to propagate quickest through WFQ scheduling, and high-volume streams to share the remaining bandwidth fairly (Chen column 2 lines 3-14).

With respect to claim 3, data frames are known to be of varying sizes, such as in Ethernet or Frame Relay networks.

With respect to claims 5 & 6, Usukura discloses having more than two output paths (page 2 paragraph 30).

With respect to claim 7, Chen discloses wherein the scheduler includes a first integrated circuit (column 2 lines 56-57 and claim 14).

It would have been obvious to include the output ports in a second integrated circuit coupled to the first integrated circuit to use the same technology as the scheduler.

7. Claims 11 & 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Usukura (US 2001/0004363 A1) in view of Chen et al (US 6,975,638 B1) as applied to claim 8 above, and further in view of the admitted prior art.

Claim 11 has been treated as dependent on claim 8.

On pages 6 & 7 of the present application, it is disclosed that WFQ uses the known formula $CP + ((WF \times FS)/SF)$, wherein CP is a current pointer value associated with the respective flow; WF is a weighting factor associated with the respective flow based in part on a weight scalar WS associated with the output port from which the respective flow is appointed for transmission; FS is a frame size associated with the respective flow; and SF is a scaling factor.

It would have been obvious to a person of ordinary skill in the art to use the equation and factors in claims 11 & 12 in the invention as disclosed by Usukura in

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combination with Chen because they are known to be used for WFQ as acknowledged in the present application's Background of the Invention.

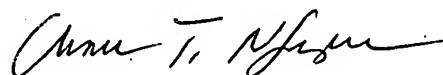
Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jordan Hamann whose telephone number is (571) 272-8564. The examiner can normally be reached on Monday-Thursday 8:30-5:30 and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on (571) 272-3126. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JJH



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